Claims

1. A method for the production and allocation of nucleic acids and the polypeptides coded by these, comprising the following steps:

   a) the compartmentalisation of nucleic acids together with an *in vitro* transcription-translation mixture in a water-in-oil emulsion,

   b) the *in vitro* expression of the fusion polypeptides coded by said nucleic acids in the microcompartments of the water-in-oil emulsion, whereby each nucleic acid is bonded to the fusion polypeptide it codes for,

   wherein each of the fusion polypeptides comprises at least one constant peptide part I and at least one variable peptide part II, and wherein the fusion polypeptides are covalently bonded to the nucleic acid coding for said fusion polypeptide in step b), and wherein the number of the fusion polypeptides per nucleic acid bonded in this manner is a definable integer.

2. The method according to claim 1, wherein the method additionally comprises the following step:

   c) the extraction of the fusion polypeptide-nucleic acid complexes prepared in step b) from the water-in-oil emulsion.

3. The method according to claim 1 or 2, wherein the method additionally comprises the following step:

   d) the selection of fusion polypeptide-nucleic acid complexes with desired properties.

4. The method according to one of claims 1 to 3, wherein the method additionally comprises the following step:

   e) the amplification of the selected nucleic acid molecule.

5. The method according to one of claims 1 to 4, wherein the method additionally comprises the following step:

   f) the random or directed mutation of one or more nucleotide(s) during or after the amplification of step e).

6. The method according to one of claims 1 to 5, wherein the method additionally comprises the following step:

g) the repetition of one of the methods described in claims 1 to 5 once or several times.

7. The method according to one of claims 1 to 6, wherein the nucleic acids are rRNA, mRNA or DNA.

8. The method according to one of claims 1 to 7, wherein the nucleic acid is DNA.

9. The method according to one of claims 1 to 7, wherein the nucleic acids are double-stranded DNA, preferably double-stranded linear DNA.

10. The method according to one of claims 1 to 9, wherein the nucleic acids are chemically modified DNA.

11. The method according to one of claims 1 to 10, wherein each microcompartment of the water-in-oil emulsion does not comprise more than one nucleic acid.

12. The method according to one of claims 1 to 11, wherein the microcompartments prepared in the water-in-oil emulsion have an average diameter of 1 µm to 2 µm.

13. The method according to one of claims 1 to 12, wherein one peptide part I is covalently bonded to one nucleic acid molecule each.

14. The method according to one of claims 1 to 13, wherein the constant peptide part I of the fusion polypeptide is a (cytosine-5-)-methyl transferase.

15. The method according to claim 14, wherein the methyl transferase is selected from the group consisting of M.Hae III, M.Hha I, M.Hpa I, M.Msp I and Alu I.

16. The method according to claim 15, wherein the methyl transferase is Hae III methyl transferase from *haemophilus aegypticus*.

17. The method according to claim 16, wherein the modified nucleic acid comprises the sequence 5'-GGFC-3' and F is 5-fluorodeoxycytidine.

18. A use of at least one (cytosine-5-)-methyl transferase in a method according to one of claims 1 to 17.

19. A use of fusion polypeptides or covalently bonded nucleic acid-fusion polypeptide complexes in a method according to one of claims 1 to 17, that comprise a constant peptide part I and a variable peptide part II each, wherein the fusion polypeptides are or will be covalently bonded to the nucleic acid coding said fusion polypeptide by the peptide part I, and wherein the number of fusion polypeptides per nucleic acid bonded in this manner is a definable integer.